

Abstract of the Disclosure

A spectral imaging device with a narrow band spectrally tunable light source. The light source includes an optical parametric oscillator that can be tuned across a wide range of wavelengths while illuminating a target. In a preferred embodiment, a Q-switched YAG laser pumps the OPO. Two-dimensional images of the target may be detected at various wavelengths by a imaging sensor with a many pixel focal plane array to generate data arrays known as hyper-spectral image cubes. These images detecting variations is optical parameters including transmission, reflectivity, and fluorescence of the target can be obtained in various spectral ranges from ultraviolet to infrared for a variety of applications in metrology, agriculture, life sciences, and in the pharmaceutical industry.